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ABSTRACT

Guidelines for use of the Common Command Language (CCL) are briefly described in this report. The CCL was designed to combine functions of individual command languages available with databases on the interactive bibliographic retrieval system 3RIP. Conditions of user-system interaction are explained, with a list of user aids available. The 20 commands comprising the language are summarized, then discussed in more detail in a discussion on searching with CCL. Appendices contain a symbol table for English 3RIP and selected dynamic help messages. (SW)

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**REPORT TRITA-LIB-4067** **APRIL 1980**

# ON IMPLEMENTING THE COMMON COMMAND LANGUAGE WITHIN SRIP

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## INTRODUCTION

There are a number of established computer systems for interactive retrieval of bibliograhic references. For each such system there is a command language with peculiarities of its own making it difficult to use for anyone unfamiliar with it. Many of the systems are similar, however, as they rely on file inversion and Boolean search strategies in order to locate and retrieve reference records.

This forms the basis for a common command language for bibliographic retrieval, the CCL. It was developed for the commission of the European Communities by Alan Negus and Andrew Snowden of Scicon Consultancy International Ltd.

One important requirement governing the development of the CCL has been that it must not obscure any important trait of the existing major bibliographic retrieval systems. This has led to the CCL incorporating most of the important functions of the command languages of these systems, causing the CCL to cover more than any one of them.

The CCL has nowhere been implemented in its entirety, but parts of it can be used in conjunction with some of the existing systems, while others are being interfaced or integrated with it.

There is no complete or precise definition of the CCL. The opinion of its authors seems to be that the CCL will not be standardized until there are some good implementations of the basic ideas presented in their user's manual draft for the CCL. This implies that anyone considering the integration of the CCL with an existing retrieval system or the development of a CCL interface will have to scrutinize the draft carefully in order to decide what parts of the CCL to implement.

With the exception of the thesaurus handling of the CCL all of its functions have equivalents or near equivalents in the text data base system 3RIP. In addition to a powerful retrieval system, designed to search several data bases in parallel, 3RIP comprises a text file handler and a text editor adapted to the processing of records in a format structurally similar to the ISO format for bibliographic information interchange.

It would be comparatively easy to implement a restricted version of 3RIP adapted to the CCL only. However, as the CCL is designed to cover the searching of no more than one data base at a time, and as its commands associated with a change of data base are somewhat cumbersome, a 3RIP implementation should at least extend the CCL to cover the parallel searching of several files. Moreover, as 3RIP includes many of the basic tools needed for a thesaurus handling in the manner suggested in the CCL user's manual draft, its inclusion in 3RIP might well be contemplated.

## References

1. Negus, A.E. and Snowden, A.E.: EURONET-DIANE, User's Guide (Common Command Language), Draft for Comment, Scicon Consultancy International Ltd, London 1979.

2. Larsson, R. and Löfström, M.: 3RIP - a User's Manual, Version 3, Paralog AB, Stockholm 1979. (Included in 3RIP Manuals, Paralog AB, Stockholm 1979).

In the text of this report specific references will conform to one of the following:

1. CCL:section number(s)
   referring to the Negus-Snowden report.

2. 3RIP:page number(s)
   referring to the user's manual for 3RIP.

3. HELP:page number(s)
   referring to the second appendix of this report: SELECTED DYNAMIC 3RIP HELP MESSAGES. The help texts are available within the 3RIP system and reflect its present status (March 1980). In the appendix the English standard set of 3RIP-symbols (i.e. the set of reserved words and characters of the system) has been used. However, when running 3RIP whatever set is current at the time will be used and the layout of the help texts will be adapted to the user's terminal.

## Note on Nomenclature

In the text of this report the terms 3RIP, CCL, and CCL-3RIP will be used. They will usually denote the search system part of the normal English 3RIP system, the common command language as defined in the CCL user's manual draft, and the CCL as it would be implemented within 3RIP, respectively.

## INTERACTION BETWEEN USER AND SYSTEM

The CCL and 3RIP both assume a user's input to the system to be either orders to the system or responses to requests for information from the system. The term directions (see 3RIP:6-7) will be used to denote such requests; in the CCL user's manual draft they are called specific system requests or prompts.

CCL-3RIP will accept orders in the same manner as the CCL. Thus the system will be expecting an order after having printed /? on a new line on the user's terminal, and the input of an order shall be terminated by pressing the RETURN key.

In orders only letters, digits, and a few control characters will be individually distinguishable; furthermore, no distinction will be made between upper and lower case letters. This will be controlled by character mapping functions defined in control records that can be modified within the 3RIP system itself, thus making its adaptation to national character sets a simple matter.

CCL-3RIP will not interrupt the execution of an order whenever an uncalled for RETURN is entered, as is specified for the CCL. Instead it will conform to 3RIP. Thus control-C shall be used to abort the execution of orders; if the user responds to directions by depressing the RETURN-key only, then this will be equivalent to the input of the default answer associated with the directions. The default will be enclosed within slashes in the directions typed by the system (see 3RIP:6-7).

A well-formed order shall either consist of a request for help or else of one or more command statements separated by a semicolon (;).

The handling of help requests will be discussed in the next chapter.

A well-formed command statement must not contain any semicolons (unless they are part of a character string enclosed by quotation marks ("")), and it must be headed by a command word. Command words may be abbreviated by using as many characters as are necessary to avoid ambiguity (this differs from standard 3RIP techniques (see 3RIP:6)).

In the CCL user's manual draft semicolons are allowed as delimiters within command statements. This will not be accepted in CCL-3RIP, where space and comma shall serve as internal delimiters. The existence of two redundant delimiters is somewhat excessive, particularly as one of them serves another purpose as well.

The initial processing of a command statement will depend on its command word, but in general the system will recognize numbers and character strings that will be matched against the reserved words and characters relevant to the command. Ambiguities will cause the system to display the relevant alternatives prompting the user to select one of them (see 3RIP:7).

Responses to directions will be handled as in 3RIP. Thus RETURN will

be equivalent to the default response associated with the directions; ?? will cause the system to explain what kind of response it expects; and control-C will cause the current order to be aborted.

In CCL-3RIP directions will be short; more detailed directions will be elicited by typing ??. Thus the CCL command variants preceded by a dot (see CCL:2.1) will not be needed, and hence not used.

USER AIDS

The help functions of CCL-3RIP will include those of the normal 3RIP system. Thus orders terminated by ?? will be regarded as requests for help and will be handled according to the contents of the order:

1. If the order is empty (i.e. the prompt string /? is directly followed by ??) and if the last order was normally executed, then the system will guide the user through a tree of help alternatives.

2. If the order is empty and the last order was abnormally ended, then the system will explain the use of the failed or aborted command in the last order.

3. If the order consists of a single reserved word or character, then the system will explain the use of the reserved word or character.

4. For all other orders the system will present a simple analysis of its interpretation of the order.

Most of the help functions specified for the CCL (see CCL:2.2) will also be included:

1. Substituting ? for ?? in the cases 1, 2, and 4 above will cause no change in the response from the system.

2. An order consisting of ? followed by a single reserved word or character will be handled as case 3 above.

3. For some reserved words followed by a single ?, status information associated with the word will be given. Thus
   - FIND? will be equivalent to the LIST command used to produce a search history (see HELP:13);
   - BASE?, OPEN?, and CLOSE? will all lead to the display of a list of the available data bases and their status; and
   - data-base-name? will correspond to the 3RIP command STATUS data-base-name (see HELP:15).

However, when responding to directions the answer ?? must be given, if the system is to give any help.

CCL-3RIP COMMAND SUMMARY

The following commands (with their shortest unambiguous forms in upper case letters) will be recognized by 3RIP-CCL:

| | | |
|---|---|---|
| 1. | Base | to get a list of available data bases (p. 16) |
| 2. | Close | to close data bases (entirely or partially) or to close their vocabulary parts (p. 16) |
| 3. | DEFine | to create order records (p. 17) |
| 4. | DELete | to delete sets or order records (p. 17) |
| 5. | DIsplay | to display related search terms (p. 14) |
| 6. | Find | to enter a search statement (p.12) |
| 7. | Help | to get help (equivalent to ??) (p. 9) |
| 8. | Info | to get general information (CCL:3.0) |
| 9. | List | to get set directory information (p. 16) |
| 10. | NAme | to assign a name to a set (p. 14) |
| 11. | NEws | to get news on the system (CCL:3.0) |
| 12. | OPen | to open data bases or to open their vocabulary parts (p. 16) |
| 13. | OWn | to enter standard 3RIP (p. 18) |
| 14. | Print | to output records of a set on a disk file or a lineprinter (p. 15) |
| 15. | REstart | to continue an intentionally or unintentionally interrupted search (p. 17) |
| 16. | RUn | to execute the orders of an order record (p. 17) |
| 17. | SAve | to trace the order sequence used to create a set and to save the sequence in an order record (p. 16) |
| 18. | SHow | to output records of a set on the user's terminal (p. 15) |
| 19. | STop | to end a session (p. 17) |
| 20. | Trace | to trace the order sequence used to create a set (p. 16) |

The CCL commands MORE and BACK have been omitted. However, they will be accepted as responses to directions associated with commands such as DISPLAY.

Some of the functions of the CCL commands BASE, FIND, and STOP are to be transferred to the TRIP commands OPEN, CLOSE, RESTART, and RUN.

It should also be noted that the CCL rules specifying the shortest acceptable command forms have been ignored.

SEARCHING WITH CCL-3RIP

Searching will be made (in parallel) in all open data bases or data base parts. On accepting a user's password the system will make one or more data bases accessible, and usually one or more of these data bases will be opened automatically. The two commands OPEN and CLOSE can later at any time modify the scope of the search to cover other data bases or data base parts. These commands and their relation to the CCL commands BASE and STOP will be discussed later.

## The FIND statement

In CCL-3RIP a FIND statement will be of the form

FIND search expression

A search expression in CCL-3RIP will be very similar to a search expression in 3RIP (see HELP:1-2). There will be some differences, however:

1. 3RIP-symbols for types will be CCL field labels such as FT, CT and AU. (see CCL:A1)

2. FT will be the default type covering the three types TI, UT, and AB. Any of them might be used separately in a FIND statement, but AB will there be synonymous to FT.

3. A type bound to a search expression enclosed in parentheses will be assigned to un-typed simple search expressions within the parentheses. Thus the statements
   ```
   FIND UT=ecology AND UT=environment
   FI UT=(ecology AND environment)
   F UT=ecology AND environment
   ```
   will all be equivalent.

4. NOT and EXCEPT will be synonymous operators as will
   ```
   W2 and .
   W3 and . .
   W4 and . . .
   W5 and . . . .
   ```

5. Three characters will be used to define match patterns in selection expressions (see HELP:6-9):
   - `#` denoting any character string (including the empty string)
   - `:` denoting any single character or no character
   - `!` denoting any single character

6. Default selection mode (see HELP:6-7) will be ALL.

7. For some types (e.g. AU, RA, and RI) simple search expressions (see HELP:2-3) will be handled as selection expressions (see HELP:6-9) truncated to the right. Thus AU=Snowden will locate all author names beginning with Snowden. The corresponding set will also be assigned the name AU=Snowden (not AU=Snowden#).

8. FIND statements containing more than one combining operator will be evaluated from left to right. However, expressions within parentheses will be evaluated first; and the operators W1, W2, W3, W4, W5, WS, and WP will be evaluated before the operators AND, EXCEPT (or its synonym NOT), and OR. The same priority will thus be assigned to the operator OR as to the operators AND and EXCEPT. (see HELP:4)

The differences between FIND statements in CCL-3RIP and CCL can be summarized as follows:

1. For each FIND statement the system will create a set of occurrences of words or keywords in records satisfying the requirements of the statement (see HELP:1-2). This set but not the search statement can be referred to in later orders.

2. Sets can be referred to by their numbers, assigned to them by the system; or they can be referred to by their names, assigned to them by the user or by the system (see HELP:14)

3. Parentheses will in many instances be redundant in complex search expressions as the rules stated in 8. above apply.

4. There are two kinds of types (or prefixes, see CCL:5.4.1): free text types and keyword types. Words in text and their location are associated with the former, and keywords or keyword phrases with the latter. The handling of phrases will depend on their category: if the words of a phrase are associated with a free text type, then the system will insert the operator W1 between the words, otherwise the entire phrase will be recognized as a simple search expression.

5. List forms such as FIND (OR; white; black; red) will not be accepted. (see CCL:5.3.2)

6. The search expressions on either side of one of the operators W1, W2, W3, W4, W5, WS, and WP must be of the same free text type. Either or both of the expressions may refer to a set, however. (see HELP:4)

7. Neither the adjacency connector .. nor the connectors specifying an exact number of intervening words will be accepted. (see CCL:5.5)

8. The operators W3 and WP shall be used to locate hits within a sentence or a paragraph, respectively.

9. It will not be possible to indicate that the order of the search terms is of no consequence by inserting a comma (see CCL:5.5) in conjunction with the operators W1, W2, W3, W4, and W5.

10. Un-typed simple search expressions will be assigned to the default type (FT) if they are not preceded by some other simple search expression in the statement, otherwise they will be assigned the type of their nearest predecessor.

11. None of the connectors <, >, or ALL (see CCL:5.4.1) will be accepted. The CLOSE command (see HELP:13 and 3RIP:21-23) can be used instead of < and > in entry date restrictions such as ED<1979, however.

12. The connectors DOWN, UP, NT, and BT (see CCL:5.4.1) will not be accepted until thesaurus handling is included in 3RIP.

13. Suffixes (see CCL:5.4.1, 5.4.1, 5.7) will not be accepted, unless they prove to be needed and useful.

14. Truncation and character masking will be handled as is specified in 5. of the preceding list.

15. For each selection expression (see HELP:6-9) a set is normally created and named by the expression.

16. FIND? will be synonymous to the command LIST.

17. The command forms FIND QN and FIND SAVE (see CCL:7.1-2) will not be accepted, as their purpose is better served by command RUN.

18. FIND CHPT (see CCL:7.2) will be synonymous to the command RESTART.

## The NAME statement

The NAME command (see HELP:14) of 3RIP is also recognized by CCL-3RIP. It is used by the system itself in conjunction with selection expressions, but a user doing a search involving many sets might do well employing it to assign suitably mnemonic names to important sets.

## The DISPLAY statement

In CCL-3RIP a DISPLAY statement shall be of the form

DISPLAY simple search expression (see HELP:2-3)

or
DISPLAY selection expression (see HELP:6-9)

In the former case the expression will be handled as if it were truncated to the right. Matching terms belonging to data bases whose vocabulary file parts are open will in either case be presented ten at a time. Terms can then be selected in the manner specified for selection expressions in SELECT mode (see HELP:6-9).

MORE and BACK shall be used instead of DOWN and UP as responses to the directions following on the display of a batch of terms. Adjacent non-matching terms in the vocabulary file can also be displayed and selected. When selections are done, the system will not use the expression to name the result set, as it would for a selection expression in a FIND statement.

Search expressions with connectors such as NT, BT, UP, and DOWN will not be accepted as substitutes for the normal connector =, until thesaurus handling has been implemented in 3RIP.

## The SHOW and PRINT statements

Output of search results, i.e. of all or some of the records referred to by a set, will be handled in a manner similar to that specified in CCL:6.0-2. Thus it will be possible to specify sort keys and to select records and fields for output in the SHOW or PRINT statements.

Normally there will be a number of predefined formats for each data base. They will not only specify what fields to select (as is the case for the CCL), but also sort keys and record layouts. These formats will be numbered 1, 2, ... , n for each data base. One of them will be used by default, but another can be chosen, if the output statement contains a format specification such as F=3, or if sort keys or a format are given in the manner specified in CCL:6.1.

If either of the commands SHOW or PRINT is given without arguments, the system will prompt the user to indicate a set, and, for each data base referred to in the set, a number of records to output. For PRINT statements the system will also ask the user to specify an output destination (OFFLINE or DISK=file name).

PRINT output will always be headed by a search history tracing the FIND statements relevant to the set being processed.

Each PRINT statement will cause an order record to be formed. This record can later be deleted, and on leaving CCL-3RIP the user will be asked to confirm the PRINT orders given during the session.

## The LIST Statement

A set directory of all or some sets spanning all or some data bases will be displayed if the command LIST or its synonym FIND? is given in the manner specified for the 3RIP command LIST. (see HELP:13)

The command will for each of the specified sets list its number, its size, and the FIND statement used to create it. The size will specify the number of word or keyword occurrences associated with the set in all data bases open when the set was formed (default), or the number of occurrences in the data bases specified in the LIST statement.

## The OPEN, CLOSE, and BASE statements

The commands OPEN and CLOSE will in CCL-3RIP be used instead of the BASE command (CCL:4.0-2) and the qualified variants of the command STOP (CCL:11.0).

Many users will not need the commands OPEN and CLOSE, but then all the data bases accessible to them must be opened once they have given their password to enter CCL-3RIP. However, if they want to search some but not all the data bases, if they want to formulate a search profile for data bases that are not on line, or if they want to restrict their searching to either of the oldest records or the most recent ones, then the commands will serve a useful purpose.

The OPEN and CLOSE commands of the CCL-3RIP will be identical to those of 3RIP. (see 3RIP:21-23, HELP:14,13)

In CCL-3RIP the sole function of the BASE command will be to cause the system to tell to what extent the accessible data bases are closed.

## The TRACE and SAVE statements

Both the commands TRACE and SAVE will in CCL-3RIP reconstruct the sequence of FIND statements that were used to create a set; the former in order to present a search history for the set; and the latter in order to create an order record containing the sequence of FIND statements.

The commands will conform to the normal TRACE (see HELP:16) and SAVE (see HELP:15) commands of 3RIP, but the order record created by SAVE will be stored in a file known to the system. Thus no file name shall be given in SAVE statements.

## The DEFINE statement

Order records can also be created with DEFINE statements. The DEFINE command corresponds to the 3RIP command ROUTINE (see HELP:15), but no file name shall be specified for the CCL-3RIP command.

## The RUN statement

The sequence of orders in an order record, created with a SAVE or a DEFINE statement, can at any time during a CCL-3RIP session be executed. This will be done by a RUN statement naming the order record, which may well itself contain one or more RUN statements.

The CCL-3RIP command RUN differs from the RUN command in 3RIP (see HELP:15) in the same way as DEFINE differs from ROUTINE, i.e. no file shall be specified.

## The DELETE statement

Work space can be reclaimed if unnecessary sets are cleared away. This can be done with the CCL-3RIP command DELETE corresponding to the 3RIP command PURGE (see HELP:14).

Order records can also be erased with statements of the form

```
DELETE R record-name
```

where record-name is the name of a record created by a PRINT, a SAVE, or a DEFINE statement.

## The STOP and RESTART statements

The command STOP corresponds to the 3RIP command EXIT (see HELP:13), and its function is the same: it ends a session allowing the user to save the control file created during the session. The control file will also be saved in most system crashes. (see 3RIP:64)

If a control file was saved or if a system crash has occurred, then the user will be able to continue where he left off, when he next enters 3RIP. In order to do so he should give the command RESTART (see HELP:44) and on the system's directions then enter the name of

the saved control file.

## The OWN statement

The CCL-3RIP command OWN may only be given without arguments. After having given an OWN order a user will have access to all of the standard 3RIP system. Orders following an OWN order must conform to the standard 3RIP syntax.

CCL-3RIP can be reentered, however. In order to return to CCL-3RIP the order

```
GETSYM CCL
```

should be given.

APPENDIX 1:
ENGLISH 3RIP-SYMBOL TABLE

Search commands

AND
EXCEPT
OR
W1
W2
W3
W4
W5
WP
WS

Symbols used in selection expressions

ALL
DOWN
GROUP
LEAVE
SEPARATE
SPECIFY

Symbols to change selection mode

ALL
SELECT

File handling commands

| commands | possible modifiers |
|---|---|
| DELETE | R |
| DIRECTORY | LPT SUMMARY TEXTFILE |
| FORM | STRUCTURE DUMP |
| GET | BACKUP ORIGINAL |
| INFILE | |
| OUTFILE | |
| PACK | |
| PROTECT | |
| PUT | |
| RENAME | |
| STATUS | ES |
| TYPE | BACKUP FILE FORCING LPT ORIGINAL TEXTFILE TFORM |

Other commands useful in a search

| commands | possible modifiers |
|---|---|
| CHANGE | |
| CLOSE | VOCABULARY |
| EXIT | |
| FORM | DUMP |
| GETSYM | |
| HELP | |
| LIST | |
| NAME | |
| OPEN | |
| PRINT | FILE LPT REVERSED SORTING TEXTFILE TFORM |
| PURGE | |
| PUTSYM | |
| RESTART | |
| RESTRICT | |
| ROUTINE | |
| RUN | |
| SAVE | |
| STATISTICS | |
| STATUS | ALL SS |
| TRACE | |
| TYPE | BACKUP FILE FORCING LPT ORIGINAL SORTING TEXTFILE TFORM |

Editing commands

| commands | possible modifiers |
|---|---|
| CB | C W SEN L S F R |
| CF | C W SEN L S F R |
| CP | |
| CREATE | |
| DELETE | STRUCTURE C W SEN L S F R |
| I | STRUCTURE C W SEN L S F |
| INFORM | |
| MAKE | |
| SC | |
| SEARCH | |
| SHOW | C W SEN L S F R |
| SI | C W SEN L S F |
| STATUS | ES |
| SUB | C W SEN L S F |
| TC | |

APPENDIX 2:
SELECTED DYNAMIC 3RIP HELP MESSAGES

This appendix contains general help texts for searching available within 3RIP (pp. HELP:1 - 12) and specific help texts for some 3RIP commands (pp. HELP:13 - 15).

General help texts for searching
---

```
*??

Help alternatives:
0. leave help mode
1. 3RIP in general
2. interrupting or leaving 3RIP
3. dialogue and help
4. 3RIP-symbols
   (commands and other reserved words)
5. searching
6. file handling
7. editing
8. status information
9. other 3RIF matters
Alter[illegible]ive number? /0/ 5
```

By requesting alt. 5 from the main help menu 3RIP displays a new menu of help texts for searching:

```
Searching
---------
Help alternatives:
0. leave help mode
1. a major example
2. basic concepts in searching
3. simple search expressions and
   set names
4. search commands and
   composite search expressions
5. selection expressions
6. output of search results
7. other commands relevant to searching
Alternative number? /0/ 2
```

Basic concepts in searching
---

The object of a search is to locate and to present data base RECORDs likely to match a given information need. Typically the contents of several data bases is searched in parallel, but a search may well be confined to a single data base or to parts of data bases.

SEARCH ORDERs are used to locate potentially interesting records. Such orders specify single WORDs, KEYWORDs, KEYWORD PHRASEs, or combinations of them expected to be found in the relevant records.

For each search order 3RIP creates a SET of references to all records matched by the order. The set can be referred to in later orders by the SET NUMBER assigned to it by 3RIP.

HELP: 2

A search order is a SEARCH EXPRESSION, i.e. one of the following:
- a SIMPLE search expression (locating all occurrences of a word or a keyword)
- a SET IDENTIFIER (a set number or a SET NAME)
- a SELECTION expression (used to locate occurrences of words or keywords matched by a pattern in the expression (e.g. a truncated term such as a stem)
- a COMPOSITE search expression (consisting of two or more search expressions separated by SEARCH COMMANDs thus specifying the combinations of words and/or keywords that 3RIP shall locate)

Alternative number? /0/ 3

From the menu of help texts for searching

Simple search expressions and
set names
---

The simplest search order that can be given to 3RIP just consists of a simple search expression; no "find"-command is needed (or, indeed, exists). The result will be a set referring to the records containing the search expression. The set is given a number by 3RIP, but the user may also give it a name with the NAME-command. Simple search expressions and set names shall be of the form

<type>=<character string>

where <type> is a 3RIP-symbol. Under the current password and with the changes you may have made of default type and names of symbols the system recognizes

as FREE TEXT TYPEs: TEXT
as KEYWORD TYPEs: PERS CH PT ANY
as DEFAULT TYPE: TEXT

The type and the symbol = may be omitted. They will be supplied by the system if missing in an order. If the simple search expression stands first in the order, then the default type will be used, otherwise the type used for the search expression immediately to the left of it will be inserted.

If the type of a simple search expression belongs to the keyword category and an uninterrupted sequence of character strings follows, then these will be concatenated into one character string forming a KEYWORD PHRASE.

A type may be subcategorized through the use of prefixes. In 3RIP's demonstration data bases, for example, there is a type PERS for creatures who appear in the records; the order "PERS=DUCHESS" will identify records where the duchess appears. Furthermore, the names of those of the creatures who speak in the records are affixed with the prefix SP_ so that the order "PERS=SP_DUCHESS" finds the records where the duchess is a speaker. Give the STATUS-command for information on the possible prefixes for a data base.

In order to make 3RIP interpret 3RIP-symbols and numbers as ordinary character retrieval strings they should be surrounded by "-characters.

Under 3RIP's standard character set no distinction is made between upper and lower case characters in orders, and characters other than letters, digits, and the two selection characters (see selection expressions) are treated as indistinguishable. Initial and final sequences of indistinguishable characters are deleted, and one character (_ in 3RIP's standard character set) is substituted for any internal sequence of such characters. Your password may specify another character set.

```
Do you want to see examples? /yes/:

The examples are from the Carroll data bases and use 3RIP's standard character
and symbol sets.

*hatter's
Set 1: 1 hit
*name 1 mad
*list
Set      Size     Order
  1         1      TEXT=HATTER_S
479         0     NAME 1 TEXT=MAD
*mad
Set 1: 1 hit
*purge 479
*mad
Set 2: 14 hits

Lower case letters are translated into upper case and strings of insignificant
characters are replaced by one _ (HATTER_S represents hatter's). The default
type TEXT has been supplied by 3RIP. The order "*name 1 mad" associates "mad"
with set 1 as the order "*mad" shows. To find occurrences of the word "mad"
the connexion with set 1 must be destroyed; this is done in the order "*purge
479" and so the last order finds the occurrences of "mad".
(continue?) /yes/:

*pers=queen of hearts
Set 3: 26 hits
*pers=sp_cheshire cat
Set 4: 5 hits
*ch=pig and pepper
Set 5: 0 hits
*ch=pig "and" pepper
Set 6: 16 hits
*list 3 6
Set      Size     Order
  3        26      PERS=QUEEN_OF_HEARTS
  6        16      CH=PIG_AND_PEPPER

For the keyword types PERS and CH the words constituting the search terms have
been concatenated by _-characters. The word AND in the order "*ch=pig ard
pepper" is a 3RIP-symbol and so the order is not a simple search expression.
To find the records from the chapter whose title is Pig and Pepper one must
give the last order, where the 3RIP-symbol is enclosed between "-characters.

Alternative number? /0/ 4)
```

From the menu of
help texts for searching

HELP: 4

Search commands and
composite search expressions
---

No search command is needed for a simple search expression. 3RIP regards it as an implicit command to locate all occurrences of the word, keyword, or keyword phrase corresponding to it in all open or partially closed data bases.

Search commands are used to combine pairs of search expressions creating new COMPOSITE SEARCH EXPRESSIONs.

Search commands shall have search expressions on either side.

Each search expression is matched by a set of occurrences of retrieval strings (words in text, keywords, etc.). Let LEFT CASEs denote the occurrences of the retrieval strings corresponding to the expression to the left of a search command and let RIGHT CASEs denote the occurrences of the right expression. Then the search commands of 3RIP can be summarized as follows:

| Command | Priority | Result (occurrences) |
|---|---|---|
| AND | 2 | all right cases in records containing at least one left case |
| EXCEPT | 2 | all left cases except those in records containing right cases |
| OR | 1 | all cases, left or right |
| W1 | 3 | all right cases that immediately follow on a left case |
| W2 | 3 | all right cases that follow within two words of a left case |
| W3 | 3 | all right cases that follow within three words of a left case |
| W4 | 3 | all right cases that follow within four words of a left case |
| W5 | 3 | all right cases that follow within five words of a left case |
| WS | 3 | all right cases in sentences with at least one left case |
| WP | 3 | all right cases in paragraphs with at least one left case |

Note that the last seven commands are intended for free text searching only.

A search order containing several commands will be processed in accordance with the following three rules:

1. Expressions within parentheses are evaluated first, and if they are nested, then the innermost expression is evaluated first.
2. The commands are executed in descending priority order.
3. Commands having the same priority will be executed from left to right in the expression containing them.

Rule 1 is applied before rule 2 which is applied before rule 3.

If the current type belongs to the group of free text types and a sequence of words is encountered in an order then the system will not only construct retrieval strings using the words, but it will also insert the command W1 between the strings, thus enabling the retrieval of text phrases.

Do you want to see examples? /yes/:

The examples are from the Carroll data bases and use 3RIP's standard symbol and character sets.

```
*hatter
Set 1: 55 hits
*march
Set 2: 34 hits
*hare
Set 3: 31 hits
*2 w1 3
Set 4: 31 hits in 17 records
*march hare
Set 5: 31 hits in 17 records
*list 5
Set     Size    Order
  5       31    TEXT=MARCH W1 HARE
```

The order "*march hare" is supplied with the search command W1 by 3RIP. Sets 4 and 5 are identical because set 2 refers to "march"-occurrences and set 3 to "hare"-occurrences.
(continue?) /yes/:

```
*hatter and march hare
Set 6: 28 hits in 15 records
*1 wp 5
Set 7: 11 hits in 9 records
*1 ws 5
Set 8: 8 hits in 8 records
*1 w5 5
Set 9: 2 hits in 2 records
*1 w4 5
Set 10: 1 hit in 1 record
*1 w3 5
Set 11: 0 hits
*5 w3 1
Set 12: 1 hit in 1 record
```

Sets 6 to 11, created by successively stricter "distance-measuring" commands, refer to fewer and fewer records. A comparison between sets 11 and 12 indicates that the commands W1, ..., W5 are not symmetrical: "hatter W3 (march hare)" is not the same as "march hare W3 hatter".
(continue?) /yes/:

```
*queen
Set 13: 248 hits
*queen except hare
Set 14: 243 hits
*queen except hatter
Set 15: 241 hits
*queen except (hare or hatter)
Set 16: 240 hits
*queen except hare or hatter
Set 17: 298 hits
```

Set 16 refers to occurrences of "queen" in records where neither "hare" nor "hatter" occurs. Set 17 refers to occurrences of "queen" where "hare" does not occur in the same record and to occurrences of "hatter".

Alternative number? /0/ 5)

From the menu of help texts for searching

## Selection expressions

A simple search expression can only be used to locate words or keywords that match it exactly. However, if SELECTION EXPRESSIONs are used partial matches can be located as well.

Selection expressions and simple search expressions look alike except that the character strings of the former contain at least one of the SELECTION CHARACTERs (# and ! in 3RIP's standard character set: your password may specify two other characters).

\# represents an arbitrary character string (including the empty string). Thus:
- LOCK# represents any string that begins with LOCK such as lock, locks, or locked;
- #LOCK represents any string that ends with LOCK such as lock, flock, clock, or o'clock;
- #LOCK# represents any string that contains the string LOCK such as lock, locks, locked, unlocking, flock, clock, and o'clock.

! represents ONE arbitrary character or NO character. Thus:
- LOCK! represents any string of four or five characters beginning with LOCK such as lock or locks, but not locked;
- !!LOCK represents any string of four to six characters ending with LOCK such as lock, flock, or clock, but not o'clock;
- AD!!E represents both the forms advice and advise.

Data bases may be implemented so that the use of the selection characters is not allowed first in terms or is not allowed at all. For details about an individual data base, give the STATUS-command for the data base and choose alternative 5.

When a selection expression is encountered in a search order 3RIP matches it against a VOCABULARY FILE containing all the TERMs (i.e. the DIFFERENT words, keywords, or keyword phrases) in the available data bases. What happens then depends on which of two selection modes 3RIP is currently running in:
- ALL: all terms in the vocabulary file matching the selection expression are selected and combined in a set; there is a limit to the number of terms allowed to combine automatically, 10 in the standard 3RIP-version. If there are more matches then 3RIP will select the maximum number and let you decide if that is enough or if you want to continue in the other mode;
- SELECT: the matching terms of the file are presented ten at a time for your inspection and/or selection.

If it is preceded by the name of a selection mode in an order then a selection expression will be treated according to that mode even if 3RIP is currently in the other mode.

When you enter the standard version 3RIP is in SELECT mode. A general change from one mode to the other may be made with one of the orders:
*CHANGE SELECT TO ALL
*CHANGE ALL TO SELECT.

When a list of matching terms from the vocabulary file is displayed in SELECT mode the following answers to 3RIP's directions are permissible:

| | |
|---|---|
| <list> | is a list of integers and integer intervals separated by commas or spaces, e.g. TO 2, 4, 6 TO 7, FROM 9. The integers refer to terms in the current list and not to sets. The indicated terms are selected, and when leaving the selection mode, i.e. when the response LEAVE is given, all selected terms are automatically combined with the command OR. The set created by this implied order is then named by the current selection expression, thus making it known to the current order. |
| ALL | is the same as a list referring to all the terms in the currently displayed list. |
| GROUP <list> | combines the indicated terms directly forming a set. This set is neither named nor referred to in the current order. |
| SEPARATE <list> | directly forms one set for each of the indicated terms. These sets are neither named nor referred to in the current order. |
| SPECIFY <list> | displays the distribution of the indicated terms over types and data bases. |
| DOWN | gives a new current term list containing the next batch of terms (usually ten). |
| UP | gives a new current term list containing the ten terms immediately preceding those in the current list. |
| LEAVE | ends the processing of the current selection expression. All selected terms are combined with the command OR and the result set is named by the expression. If no term was selected then the expression is equivalent to an empty set in the current order. |

Do you want to see examples? /yes/:

The examples are from the Carroll data bases and use 3RIP's standard symbol and character sets. Selection mode SELECT is assumed.

```
*hatt# and haigha
Type: TEXT
 1 <10+>   HATTA
 2 <1>     HATTA_S
 3 <55>    HATTER
 4 <1>     HATTERS
 5 <1>     HATTER_S
No more hits
Action? /LEAVE/ (the answer is given in the next example)
```

Lower case letters in the terms are translated into upper case and strings of insignificant characters are replaced by one _ (HATTER_S represents hatter's). The numbers within brackets tell how many times the terms occur in the data bases open to vocabulary inspection. However, for a term occurring in closed data bases or for other types a plus sign follows the number. There is no example of it here but for STOP WORDS (usually very common words which have not been made retrievable) the number is 0.
(continue?) /yes/:

```
Action? /LEAVE/ specify 1
 :   HATTA
 11  TEXT   MIRROR (10)
 12  PERS   MIRROR (5)
Action? /LEAVE/ 11 2
Action? /LEAVE/
Set 2: 6 hits in 3 records
*list
Set      Size     Order
  1        11     TEXT=HATTA_S OR HATTA
  2         6     TEXT=HATT# AND HAIGHA
479         0     NAME 1 HATT#
```

The answer "specify 1" displays the distribution of "hatta": it occurs in MIRROR only, but both as TEXT (10 times) and PERS (5 times). The answer "11 2" selects its TEXT occurrences and those of "hatta's", creating set 2. This is automatically named "hatt#" and helps create set 3; the answer to our original question. To select the PERS as well as the TEXT occurrences of "hatta" the answer should have been "1 2" or "11 12 2".
(continue?) /yes/:

```
*purge 1 to 3
*change select to all
*hatt# and haigha
Set 3: 6 hits in 3 records
*list
Set      Size     Order
  1        13     TEXT=HATTER_S OR HATTERS OR HATTA_S OR HATTA
  2        68     1 OR TEXT=HATTER
  3         6     TEXT=HATT# AND HAIGHA
479         0     NAME 2 TEXT=HATT#
```

In selection mode ALL (entered with the CHANGE command) the set named HATT# is created as referring to all 5 matching terms with no inspection and selection from you. Note that only TEXT occurrences of "hatta" are included.
(continue?) /yes/:

```
*purge 1 to 3
*hatt# and select hai#
Type: TEXT
 1 <10+>       HAIGHA
 2 <27>        HAIR
No more hits
Action? /LEAVE/ 1
Action? /LEAVE/
Set 4: 6 hits in 3 records
*list
Set      Size     Order
  1        10      TEXT=HAIGHA
  2        13     TEXT=HATTER_S OR HATTERS OR HATTA_S OR HATTA
  3        68     2 OR TEXT=HATTER
  4         6     TEXT=HATT# AND HAI#
478         0     NAME 3 TEXT=HATT#
479         0     NAME 1 TEXT=HAI#
```

As it is preceded by SELECT the selection expression HAI# is treated in selection mode SELECT even though 3RIP is currently in selection mode ALL. (continue?) /yes/:

```
*purge 1 to 4
*#sugar#
Type: TEXT
 1 <2>         SUGAR
 2 <1>         BARLEY_SUGAR
 3 <1>         SUGAR_LOAF
No more hits
Action? /LEAVE/ separate 2 3
Set 1: 1 hit
Set 2: 1 hit
Action? /LEAVE/ group 2 3
Set 3: 2 hits
Action? /LEAVE/
*list
Set      Size     Order
  1         1      TEXT=BARLEY_SUGAR
  2         1      TEXT=SUGAR_LOAF
  3         2     TEXT=SUGAR_LOAF OR BARLEY_SUGAR
```

The order "*separate 2 3" creates one set for each of the enumerated terms, while "*group 2 3" combines the enumerated terms with an OR-command and creates a resulting set.

```
Alternative number? /0/ 6
```

From the menu of help texts for searching

HELP: 10

Output of search results

When a set is created its number and its size is displayed, but the records referred to by the set are not yet presented: a PRINT order is needed if all or some of the records are to be output.

As usual with 3RIP-commands it may be given alone, in which case 3RIP will ask for the additional information it needs: a set identifier and for each data base referred to by the given set the number of records wanted. This information may also be given with the command directly in the order.

Normally the records of a set are selected and presented in ascending record number order for each data base. The output is normally sent to the user's terminal, where each record is displayed under the format currently valid for its data base.

The selection and presentation order and the output destination may be changed by the use of modifiers in the PRINT-order. The legitimate modifiers are:

REVERSED — causes the records from each data base to be selected in descending record number order. If the modifier SORTED is not used then this is also the order the records are presented in.

SORTED — causes the selected records to be sorted before output; the sortkey for each record is created from its contents according to the rules given by the current output format. This modifier must not be used together with the modifier TFORM.

LPT — causes the selected records to be sent to a lineprinter in the currently valid output formats.

TEXTFILE — causes the selected records to be appended to an ordinary ASCII text file, whose name 3RIP will ask the user for, in the currently valid output formats.

TFORM — causes the selected records to be appended to an ordinary ASCII text file, whose name 3RIP will ask the user for, in 3RIP's input format, TFORM.

FILE — causes the selected records to be appended to a 3RIP-file, whose name 3RIP will ask the user for.

As output may only be sent to one destination with one order, no more than one of the last four modifiers must be present in the same order.

The order: "FORM n", where n is a positive integer, selects an output format for each data base. The STATUS-command gives information on how many formats are available with examples of their use.

Alternative number? /0/ 7

From the menu of help texts for searching

Other commands relevant to searching

Besides the search commands the following commands are useful while searching (not more than one of them must be used in the same order):

OPEN — opens closed (or partially closed) data bases to retrieval and to examination of the vocabulary file through selection expressions. If the modifier VOCABULARY is given then the opening concerns the examination of the vocabulary file only.

CLOSE — closes open data bases to retrieval and to examination of the vocabulary file through selection expressions. If the modifier VOCABULARY is given then the closing concerns the examination of the vocabulary file only. If the modifier is not given then partial closing to retrieval is possible.

RESTRICT — creates a new value set which is a subset of (or possibly is identical to) a given old value set. A value set is a set referring to occurrences of retrieval strings associated with numeric values. The new set will keep only those references from the old set whose associated numeric values belong to a given sequence of values or value intervals.

STATISTICS — computes simple statistics for the values in a value set: the minimum, the maximum, the mean, and the standard deviation.

NAME — names a given set so that this may be referred to by the given name in subsequent orders.

PURGE — deletes sets with given names or numbers.

LIST — lists for each set identified by number or name: the number of the set, the size of the set, and the order that once created the set.

TRACE — traces the origins of a set identified by name or number and lists them. If the order that once created the given set does not refer to any other sets then this is the same as giving the command LIST for the set, but if this is not the case then the whole chain of involved sets will be listed.

SAVE — traces the origins of a given set and saves all the orders that were involved in the creation of that set. The chain of orders are saved in a record in a file whose names the user shall give.

ROUTINE — allows the user to enter a series of 3RIP-orders (which do not have to be search orders) and save them in a record in a file whose names the user shall give.

RUN — causes the 3RIP-orders saved in a given record in a given file by an earlier SAVE- or ROUTINE-order to be executed.

PRINT — presents the records referred to by a given set. (See also alternative 5.)

FORM — selects new output formats for the data bases (used by subsequent PRINT-orders).

HELP: 12

| | |
|---|---|
| STATUS | gives the status for the search system (if the user also gives the modifier SS) and/or the data bases whose names the user gives. |
| CHANGE | allows the user to change the names of 3RIP-symbols, to change from the selection mode SELECT to ALL or vice versa, and to change the default search type. |
| PUTSYM | puts the currently valid symbol set in a record in a file whose names the user shall give. |
| GETSYM | changes from the currently valid symbol set to the one in the given record in the given file. |
| EXIT | terminates the 3RIP-session. The user will be asked whether he wishes to save the control file containing the current sets. If so he must give a file name under which the control file will be saved. |
| RESTART | allows the user to pick up a previous search. 3RIP will ask for the name of a file to be used as the control file for the current session. This should be the control file saved when leaving an earlier 3RIP-session. |
| HELP | is equivalent to ??, which is to be preferred. |

For further information on any of these commands type the command followed by ??. This cannot be done until you have left this HELP dialogue and received a *-prompter from 3RIP.

Alternative number? /0/

*

Simply depressing the return key gives the default value zero (="leave help mode")

Help texts for some 3RIP-commands

---

CLOSE (VOCABULARY) <data base name> (data base name)...
   closes each named data base.

CLOSE (VOCABULARY) ALL
   closes all the data bases.

CLOSE (VOCABULARY)
   causes 3RIP to elicit the information it needs through directions.

If the modifier VOCABULARY is present then the closing concerns selection expressions only, i.e. truncation will not work, but other retrieval functions will continue to operate.

If the modifier VOCABULARY is not present in the first two forms of the command above then the order may be concluded by either FROM or TO followed by either a record number or a date. For example:

CLOSE <data base name> FROM <record number or date>
   closes in the named data base those records whose numbers are equal to or greater than that given. If a date is given (in the form 1789-07-14 for July 14, 1789) then 3RIP will translate it to a record number (give the order STATUS <data base name> to see the translation table used).

---

EXIT
   causes 3RIP to end the 3RIP-session. 3RIP first asks if the control file should be saved.

   If the answer is yes then 3RIP will ask for a new file name and save the control file under that name. This means that in a later 3RIP-session the present search can be picked up again with the command RESTART. The control file contains those sets created during the present session which have not been deleted.

   If the answer is no then the control file will be deleted (regardless of the DEC default protection for this PPN).

---

LIST <set identifier or interval> (set identifier or interval)...
   lists the given sets. For each set is listed: the number of the set, the size of the set, and the order causing the creation of the set. An interval shall have the following form:

   <set identifier> TO <set identifier>

LIST
   lists all current sets.

Both the above forms of the command may be concluded by one or more data base names, separated by spaces. In such a case the size listed for each given set will be the number of references to the named data bases.

---

NAME <set identifier> <new name of set>
assigns the given new name to the given set. The new name may from now on be used instead of the given set identifier in orders to 3RIP. The new name shall be of the form:

<type>=<character string>

where <type>= may be omitted, in which case 3RIP will supply the default type. In other words, the new name is an ordinary simple retrieval expression, which has now been reserved to refer to the named set.

3RIP establishes the connection between the new name and the given set by creating a new, empty set. By deleting this set with the command PURGE the naming may be made void.

NAME must not be given in indirect form, but only as described above.

---

OPEN (VOCABULARY) <data base name> (data base name)...
opens each named data base.

OPEN (VOCABULARY) ALL
opens all the data bases.

OPEN (VOCABULARY)
causes 3RIP to elicit the information it needs through directions.

If the modifier VOCABULARY is present then the opening concerns selection expressions only, i.e. truncation will work, but other retrieval functions will continue to operate.

---

PURGE <set identifier or interval> (set identifier or interval)...
deletes the given sets. If a named set should be among the deleted sets then its naming set (cf. the command NAME) will also be deleted, even if not expressly given. However, if the set number of a naming set is specified in the order then that will be deleted, while the named set remains. A set interval shall have the form:

<set identifier> TO <set identifier>

PURGE <set identifier or interval> <data base name>
deletes all references to the given data base in the given sets.

PURGE must not be given in indirect form, but only as described above.

---

RESTART
causes 3RIP to ask for the name of a control file (saved when leaving an earlier 3RIP-session with the command EXIT). Once a file name has been given 3RIP will delete the control file of the present session and start anew with the given file. (To see what sets the new control file contains give the command LIST.)

ROUTINE <record name> <file name>
creates an order record and stores it under the given record name in the given file. If the file does not exist then it will be created. 3RIP will ask for the orders which are to make up the record. They shall be entered one by one, 3RIP repeating its question between each. Only when an empty order is entered, i.e. when RETURN is pressed directly, does 3RIP save the orders in the record.

ROUTINE
causes 3RIP to ask for the names of the record and the file as well.

The order sequence thus saved may later be executed, in this or another 3RIP-session, with the command RUN.

---

RUN <record name> <file name>
executes the order sequence found in the named record in the named file. (This requires that an order sequence has been saved there, in this or in an earlier 3RIP-session, with a SAVE or ROUTINE command.)

RUN <record name>
also executes an order sequence saved earlier, but uses the named record in the file indicated by the system variable INFILE.

RUN
causes 3RIP to elicit the information it needs through directions.

---

SAVE <set identifier> <record name> <file name>
saves the search order sequence which created the given set in the named record in the named file. If the file does not exist then a new one will be created. (This search order sequence may then be executed again, in this or in a later 3RIP-session, with the command RUN.)

SAVE <set identifier>
causes 3RIP to ask for a record name and a file name.

SAVE
causes 3RIP to ask for the number or name identifying a set as well.

---

STATUS (modifier) (SS) (ALL)
gives the status for the different parts of the system.

STATUS (modifier)
causes 3RIP to use directions to find out what information is desired. SS gives status for the search system and ALL for all the data bases (any number of individual data base names may be given instead).

One of the modifiers LPT and TEXTFILE may be used in which case the status information will be sent to the lineprinter or written in a text file.

---

HELP: 16

TRACE <set identifier>
   traces the search order sequence which created the given set and lists the sets created by the orders in the same way as the command LIST.

TRACE
   causes 3RIP to ask for the number or name identifying a set.

---